Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL AND OTHER IMPROVEMENTS.

Vol. 4. New York, November 4, 1848. No. 7.

THE
SCIENTIFIC AMERICAN:
CIRCULATION 11,500.
PUBLISHED WEEKLY.
At 128 Fulton Street, New York (Sun Building,) and 13 Court Street, Boston, Mass.
By Munn & Company.
The Principal Office being at New York.

TERMS—$2 a year—$1 in advance, and the remainder in 6 months.

☞See advertisement on last page.

Poetry.

MIGHT MAKES RIGHT.

BY J. C. PEABODY.

There is a law in Nature's course,
Pervading all her plan:
Which rules alike the unconscious soul
And mighty heart of Man;
It makes existence what it is,
And with despotic sway,
Marks out the destinies of all
And none can disobey;
Or low or high,
In earth or sky,
By day or night,
'Tis Might makes Right.

Earth owns it and with magic power,
Draws all things to her breast;
She binds the rocks and mountains firm,
And holds the sea at rest—
But mightier storms which lash the surge,
And Earth's attraction break;
And mightier subterranean fires
Make rocks and mountains quake.

The Canker worm destroys the leaf
And blights the opening flower;
The Robin kills the Canker-worm,
Because he has the power;
The Hawk darts down with flushing eye—
The Robin is his prey;
And Child with arrow or with gun
The bloody Hawk will slay.

And Man, fair Nature's masterpiece,
Must crush his brother down—
The mighty rule, the false do serve,
And tremble at their frown.
But there's a stronger tyrant yet—
A bloody one and grim:—
'Tis Death! he utters his commands,
And all must bow to Him.

THE REST FOR THE WEARY.

BY JAMES MONTGOMERY.

"There is a calm for those who weep;
A rest for weary pilgrims found,
They softly lie and sweetly sleep
Low in the ground.
The storm that wrecks the winter sky,
No more disturbs their deep repose,
Than summer evening's latest sigh,
That shuts the rose.

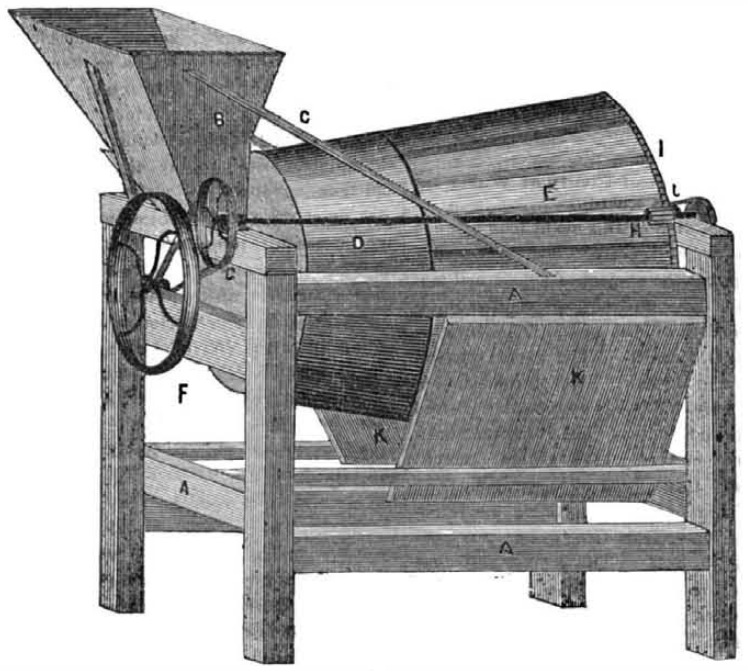
"Art thou a mourner? hast thou known
The joy of innocent delights,
Endearing days for ever flown,
And tranquil nights?
O live! and deeply cherish still
The sweet remembrance of the past;
Rely on Heaven's unchanging will
For peace at last.

"The soul of origin divine,
God's glorious image, freed from clay,
In Heaven's eternal sphere shall shine
A star of day.
The sun is but a spark of fire.
A transient meteor in the sky,
The soul immortal as its sire,
Shall never die."

To fix drawings of chalk or crayons, pass the drawings through some sweet milk.

BARBER'S PATENT METALLIC GRIST MILL.

Figure 1.

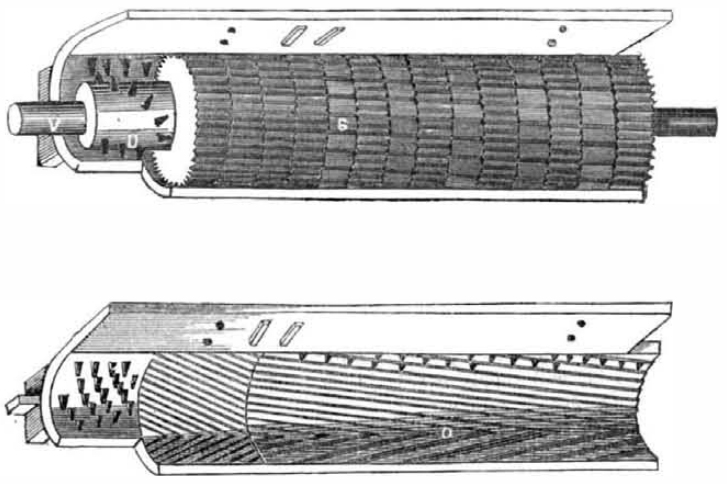


This is the invention of Mr. Asa Barber, and patented in June 1847. Messrs. Matthews & Fulton, of Troy, N. Y., are the owners of rights, &c. and applications for unsold rights and machines may be made to them. J A. Hart & Co. of New London, Conn., own the right for the New England States and manufacture the machines.

The mill is capable of grinding Corn in the ear, and can also grind all other kinds of grain, and although it has metal grinders never requiring to be sharpened, it is so constructed and the cooling surfaces so arranged that the grain is not heated, and thus the great objection always urged against metallic mills effectually removed. By a two horse power it is capable of grinding from eight to ten bushels per hour, and so much has its utility been esteemed that both gold and silver medals have been awarded to it by the American Institute.

DESCRIPTION.—A A, is the frame. B, is the hopper. C, are stays connected with the longitudinal beam of the frame supporting the hopper. E, is a large revolving cylinder covered with a wire cloth for bolting. F, is a fly wheel. G, is a band wheel or pulley, driven by a band from the main driver to propel the shaft H, which has a small pinion on it meshing into cogs or a large cog rim I, of the large cylinder E. J, is a small pulley on H, which drives by a band the shaft (not seen) of an interior scraper. K K, are two angular boards, to guide the ground meal into the grainary.

Figure 2.



This is a section view and does not show all the interior but merely the grinding surfaces. B, is a revolving iron grooved roller, made of a series of cast grooved rings secured to the shaft S. This shaft is made to sit and revolve in O, a concave iron grooved bed which is stationary. D, is a shoulder with teeth to grind the cob as it leaves the hopper before being submitted to the grinding operation of the revolving roller B. Suppose these two sections to be placed in the inside of E, with B revolving above and in the concave bed O. Now suppose the grain is entered in the hopper, and the revolving roller set in motion, it will easily be perceived that the grain will be carried into and between the roller and the bed and discharged through the channels or grooves on C. Still the meal thus ground has to be bolted. This is done in a most simple manner. We mentioned before that a bolting cloth covered the outside of E, fig. 1. Well as E is revolved the fine meal falls through the bolting cloth at the bottom, and the coarse is carried round and falls down into the mill above, to be ground over again. By this way of grinding, the revolving grinder and the bed need not be in such close contact as other grinding mills must be, and the large revolving surface of E keeps the meal perfectly cool and allows the interior of the mill to be quite open to the atmosphere. There is a scraper, which we spoke of before, which is revolved by the band from I, at the right of fig. 1, which scraper keeps the grooves of the roller or bed from getting clogged.

From this description it will at once be perceived that this is a very simple as well as a good grist mill, and it is so very portable, strong and durable, that every farmer should by it become his own miller. It will be a great saving both in time and money to every farmer who purchases them.

Messrs. Frink & Prentiss, of Jersey City, are now making some of these machines.

RAIL ROAD NEWS.

At a meeting of the stockholders of the New London, Willimantic and Palmer R. R. Co. held at Monson, Mass., 25th ult., Andrew W. Porter, Albert Norcross, Isaac King, Cyrus Knox, and Hiram Newton were chosen Directors. At a meeting of these Directors, A. W. Porter was chosen President, F. Newell Secretary, and W. N. Flynt Treasurer. It was also voted, that this Corporation unite with the New London, W. and Springfield R. R. Co., according to the provisions of the charter.

Western Travel—Fare Reduced.

Arrangements have been made by the railroad companies between Albany and Buffalo, so that passengers will hereafter be taken from tidewater to the Lakes in 17½ to 18 hours, and after the first of November the through fare, (from Albany to Buffalo) will be reduced to $9 75. Passengers may now leave this great Metropolis in the evening, sleep on board one of the North River steamers the first night and in a hotel at Buffalo the second. This movement on the part of the Railroad Companies is in the right direction and is one that will be highly appreciated by that notorious and sometimes exacting personage, Traveling Public.

Great Railroad Depot.

The Common Council of our city have granted a large square bounded by Read, Washington and West sts., for the Depot of the New York and Erie Railroad Company. In a short time the building will be commenced.

Mr. Gilmore, of the N. Y. and New Haven Railroad, has invented a Time Table, adapted for use on that road. The distances and time of running are so graduated that the proper position of a train, at any particular time, may be seen at a glance.

An Engineer Arraigned for Carelessness.

John Lentz, chief engineer of the steamer Concordia, at the time of the explosion of her boilers, was arraigned at New Orleans last week on a charge of the chief officer for gross and criminal negligence and carelessness causing the destruction of the boat and the death of several persons. The prisoner after a long examination, in which many witnesses gave their belief that insufficient water in the boilers was the cause of the explosion, was discharged an equal number of witnesses testifying their belief that the explosion was from other causes.

Beech Trees and Lightning.

A correspondent of the Gardner's Chronicle, says: "Having frequently heard that the beech tree was never struck by lightning, I felt dubious about the fact. All doubts on this subject are satisfactorily set at rest—at least to my satisfaction; for during a severe thunder storm in Northumberland the lightning struck a beech tree descending down the trunk, and ploughed up the soil to a distance of 20 yards from the base of the tree, it therefore has no more claim than other trees to be considered a non-conductor of electricity."

There are fifteen flouring mills at Oswego, with eighty run of stone, and can grind 32,000 bushels of wheat per day.

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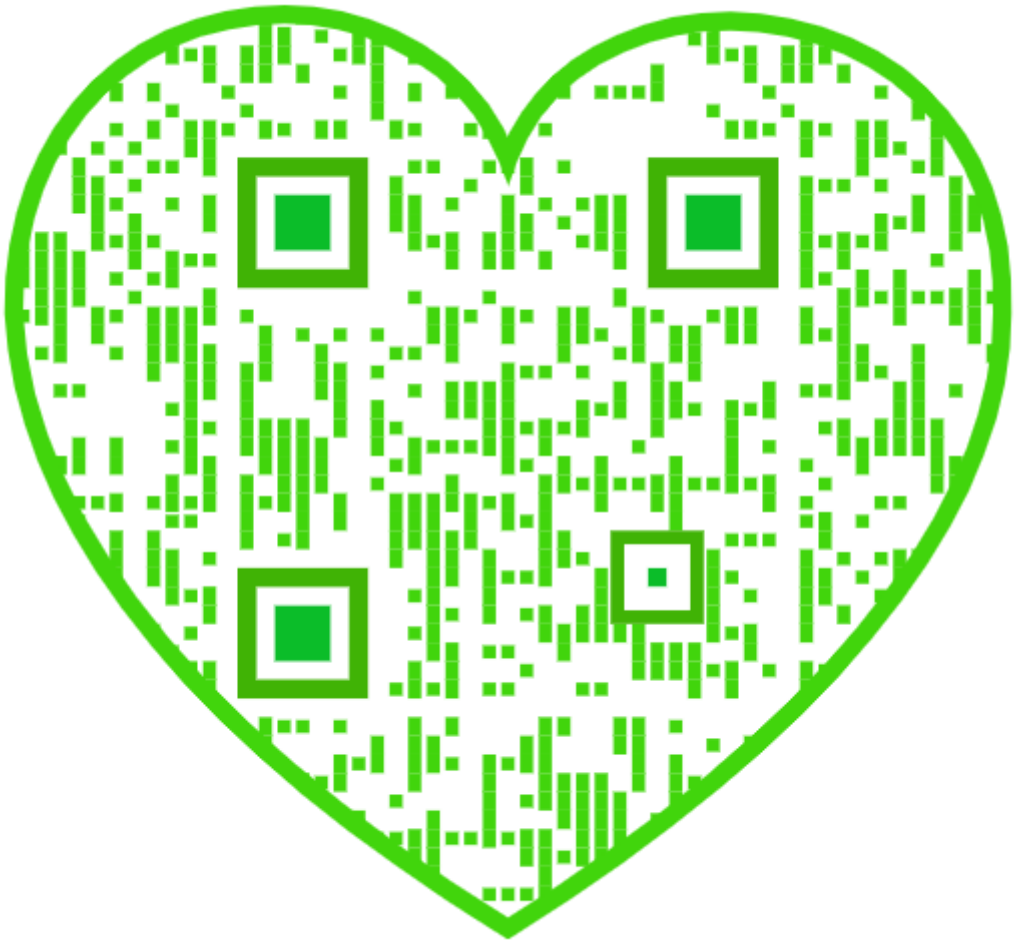

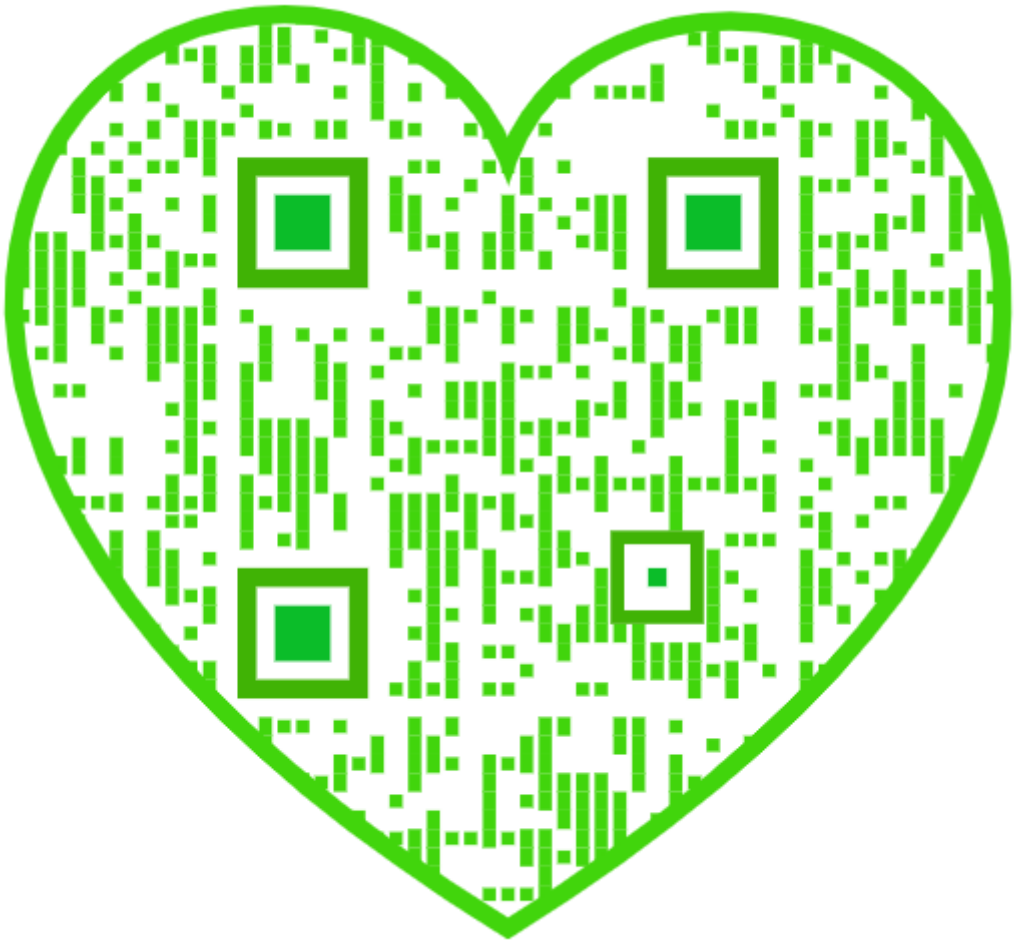

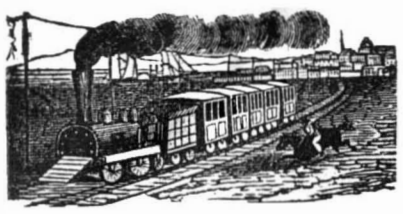

The Fair of the American Institute.

No. 4.

PREMIUMS AWARDED.

GOLD MEDALS.

Scofield, Capron & Co. Walden, N. Y. for best Black Broadcloth, made from American wool.

New-England Co. Rockville, Ct. the best Black Fancy Cassimeres.

New-York Mills, Oneida Co. the best Cotton Goods.

J. H. Schomaker & Co. Philadelphia, Pa for the best Piano-Forte.

Ball, Tompkins & Black, 247 Broadway, for the best Silver Ware.

Pierpoint, Mallory & Co. New-Haven, Ct. for the best Locks, Mineral Knobs and Trimmings united.

R. Heinisch, Newark, N. J. for best Tailors' and other Shears.

Holley & Merwin, Salisbury, Ct. for best specimen Small Cutlery.

Spencer & Rendeli's Broadway and Maiden lane, N. Y. for best Gold Pens.

W. Rider & Bros. 58 Liberty-st. best and great variety I. Rubber Goods.

Bliss & Creighton, 42 Fulton-st. N. Y. Marine Chronometers, entirely of American manufacture.

Brooklyn Flint Glass Co. for best Colored, Plain and Cut Glass.

Woram, Houghwout & Johnson, 563 Broadway, N. Y. for best Chandeliers and Candelebras.

Ryerson & Dunscomb, 279 Bowery, N. Y. for Superior Harness.

Ebenezer Barrows, 288 Water-st. N. Y. for best Hot-Air Furnace for Anthracite coal.

P. B. Larned & Co. Albany, N. Y. for best Parlor Stove, wood or coal.

Jord. L. Mott, 264 Water-st. N. Y. best Wood Stove for schools and churches.

John Stephenson, 27th-st. N. Y. for Omnibus very superior workmanship.

C. & A. Beatty. 87 Third-ave. for Omnibus very superior workmanship.

Royal E. House, Brooklyn, L. I. for Magnetic Telegraph.

E. W. Ellsworth, East Windsor, Ct. for Delineator of great excellence.

G. A. Backus, 44 Fulton-st. for best Japanning on Papier Mache of American manufacture.

R Hoe & Co 29 and 31 Gold-st. for best Circular Saws, &c.

C. Leicht, 10 Leonard-st. for best Inlaid Cabinet work.

Henry Stanton, U. S. A. for wooden Life Boat, India Rubber Buoys outside.

P. B. Savery, Phila. for very superior Enameled Ironware.

W. J. McAlpin, Brooklyn, L. I. for Dry Dock at Brooklyn.

A. B. Allen & Co. 187 Water-st. for greatest variety and best assortment of Agricultural Implements.

Steam Engines, Models, Machinery, and Inventions.

Wm. Burdon, Brooklyn, L. I. for best Steam Engine.

H. R. Worthington & W. H. Baker, best Steam Fire Engine & Pump.

D. Griffen — Broadway, for Heat Generator for Steam Boilers.

Charles Ross, & Co. 38 Broadway, for best Portable Flour Mill.

Barber & Felton, Troy, N. Y. for best Portable Mill for Feeds.

W. P. Springer & Co. 134 Front-st. for best Smut Machine.

S. T. Thomas, Westbrook, Me. Machine for making Weavers' Harness.

A. M. Freeland, 87 Mangin-st. N. Y. for superior Iron Planing Machine.

Perry G. Gardiner, 40 Wall-st. for the best Railroad Car Wheels.

Fowler M. Ray, 200 B'dway, for best India Rubber Railroad Car Springs.

A. Smith, Lockport, N. Y. for best Stave Dressing machine.

Geo. Page, Baltimore, Md. for Portable Horse Power and Saw Mill.

Peter Von Schmidt, 48 Duane-st. for Improved Cotton Gin.

B. Brundred, Paterson, N. J. for improved Spinner for Cotton and Worsted.

Wm. B Leonard, Matteawan, N. Y. for excellent Cotton and Worsted Cap-Spinning Throstle.

Wm. B. Leonard, Matteawan, N. Y. for excellent Cotton-Drawing Head Machine.

S. R. Parkhurst, 16th-st. First-avenue, N. Y. for very excellent Wool-Burring cylinder.

G. E. Sellers, Cincinnati, Ohio, for important improvement in Locomotives for ascending and descending inclined planes.

We shall publish the list of Silver Medals next week.

The Introduction of Plenty of Water into Boston.

The celebration of this event took place in the "Cradle of Liberty," last Wednesday week, and was the subject of a most brilliant display and the cause of great popular rejoicings, worthy of the great demonstration made on that occasion. The event is an important one to Boston. The introduction of plenty of pure water has long been a desired object with her citizens, but it was not until within three or four years past, that the subject has been taken hold of in earnest. The act of the Legislature authorising the introduction of water from Long Pond, was passed March 30, 1846 The ground was first broken Aug. 20, 1846, and in a little over two years the work has been completed.

The Boston Times says: The expense was originally calculated at $1,600,000. Drafts for the work have thus far exceeded three millions of dollars, and farther expense will doubtless be incurred.

Besides the Aqueduct itself, the great features of this enterprise are the Beacon Hill Reservoir in Boston; the Reservoir on Dorchester Heights, South Boston; the great Reservoir and Gate House on Corey's Hill in Brookline, from which the water of the Lake is brought to the street mains and reservoir in Boston in two iron pipes, thirty-four inches in diameter and extending nearly four miles, and which are capable of delivering daily three millions of gallons of water; the Charles River Bridge at Newton Lower Falls, which is built on three arches; the Pipe Chamber in the vicinity, and the Road Bridge, which is built on a single arch, and said by all to be a most splendid piece of masonry; the Waste Wier, four miles beyond the Lower Falls, where the aqueduct passes over a considerable stream; and finally the Gate House, a granite edifice at the Lake itself.

The Reservoir on Beacon Hill covers an area of 40,000 square feet and will hold 3, 000-000 of gallons of water. The level will be 6½ feet above the level of the floor of the State House. This reservoir, which will throw a jet of water to a great height, is intended for a reserve fountain in case of any accident to the great pipes. The Reservoir on Dorchester Heights contains an area of 70,000 ft. and is capable af delivering 7,000,000 of gallons per day. This is also intended for a reserved fountain and the two Reservoirs together will dispense 7,000,000 of gallons a day. This quantity, it has well been said, will supply more than 16 gallons a day for five days to every man, woman and child in the city,—a great blessing truly.

The fall of the water from the Reservoir in Brookline is two feet to the mile and the level of the reservoir is consequently 8 feet higher than that of the great reservoir in Boston.—This reservoir covers thirty acres, and the water will be in some places 20 feet deep and will average 15 feet deep, thereby constituting a perfect safe-guard for the city if any accident happens to the conduit above. And again the great reserve fund of all—Lake Cochituate—covers a surface of 659 acres, and drains a surface of 11,480 acres, being in some places from 70 to 80 feet in depth.

We hope that Albany will at once take measures to bring in a plentiful supply of good water to that city. This she can do at no great expense, and after that, she need not fear for the conflagration of the city.

Improvement in making Coke.

A patent has recently been secured in England for the better manufacture of coke by Mr. F. Ranksom, of Ipswich, the principle of which consists in cooling coke and other kilns or ovens, causing air to circulate or pass by mechanical apparatus through flues or passages used for cooling such kilns or ovens, and the charges therein. In working coke kilns or ovens heretofore, the process of cooling has been effected, by having air-passages or flues arranged so as to allow currents of air freely to circulate in contact with the inner lining of the kiln or oven, but not so as to be permitted to come in contact with the charge itself contained therein, such circulation of air in flues or passages as heretofore, being caused by the rarefaction from the heat of the flues. This improved mode of working coke ovens, is far superior to the very old method of drawing the charge when hot, and cooling down by water. In working such description of coke kilns or ovens however, it has been found that the time of cooling a kiln or oven is very uncertain, and depends entirely upon the state of the external atmosphere; and he has found it also very important to cool down the charge as quickly as possible. In all ovens constructed according to this invention, the air when passing through the flues simply rises through a short pipe into the atmosphere by its rarefaction, the pipe having little if any effect in causing the circulation or passage of the air through the flues. The invention therefore, uses rotatory fans or bellows in preference to other known means for the purpose of cooling coke ovens or kilns; these blowers or fans are to be used in such a manner as to be continuously withdrawing the air from such flue or pas aforesaid, and permitting or allowing the external air to rise into the flues. and thus cool the same quickly as well as the charge also.

This method of cooling coke and charcoal ovens will be of interest to many in our coal regions. As we have had a number of communications addressed to us on this very subject, we publish the above which is now free property for the United States for the benefit of those interested, in cooling rapidly, either kilns or retorts.

The Strange Case in Surgery.

The Woodstock, Vt. Mercury, says: "We gave some account a few weeks ago of the wonderful case of Mr. Gage, foreman of the railroad in Cavendish, who in preparing a charge for blasting a rock had an iron bar driven through his head entering through his cheek and passing out at the top of his head with a force that carried the bar some rods, after performing its wonderful journey through skull and brains. The iron was in diameter an inch and a quarter and in length three feet and seven inches; the upper end of the iron however tapering to the diameter of one fourth of an inch. We repeat the dimensions of the rod as we observe some of the papers that copied the article substituted the word circumference for diameter, thinking perhaps the story told in that way would be quite as large as could well be believed. But we refer to this wonderful case again to say that the patient not only survives but is much improved, the wound in his head has healed, the scuttle in his roof is closing up, and he is likely to be out again with no visible injury but the loss of an eye."

Fires.

On Friday evening, the 27th ult. the large cotton weaving factory of Knox & Son, in Jane st., this city, was consumed by fire. The loss was about $65,000. About 100 hands are thus thrown out of employment.

On Sunday morning last, the 29th ult., in Albany, the office of the Cultivator, and a large paper hanging warehouse beside it, were entirely destroyed by fire—which was said to have been caused by the spontaneous cembustion of paper waste in the basement. The loss is considerable. It appears as if an angry Providence was frowning upon Albany.

Female Operatives.

A number of respectable young women who are tailoresses, have taken a shop In Liberty street, this city, and have set up for themselves. This is right; why can they not enjoy both the benefits of labor and capital.

American Slate.

At the village of Brownville in Maine, there is a most excellent slate quarry of no great age. The quality of the slate is superior and the quantity is said to be inexhaustible. The workable vein is known to be sixty yards, and is supposed to be one hundred or more wide. The elevation from the river Pleasant to the summit is some three hundred feet, giving a very good depth. A tunnel has been opened through the ledge, some sixty to eighty yards, to take the water from the quarry to the river. The workmen are all Welsh, and make the slate by contract. At the village there is a factory for the manufacture of writing slates. The slates for the purpose are quarried at the same time as those for roofing, and laid aside, to give employment to the men in winter Some ten or twelve thousand were made the past winter, and the quality will probably increase, as the quarry is opened further.

Maryland Ten Hour Association.

The Baltimore Sun says that an association has lately been formed at Ellicott's Mills, the members of which pledge themselves to use all legal and honourable efforts to secure the enactment of a law making ten hours a legal day's work. The president is Isaac Duval, Esq. Under the present system they declare there is no time for intellectual improvement, moral and religious training and social intercourse. Regardless of past failures and obstacles, they deliberately and firmly plant themselves upon the broad basis of philanthropy, education and progress, regarding their union and culture. They also return thanks to Elias Ware, Esq., of Baltimore. for his exertion in the Legislature of Maryland, in behalf of the system

Here we have a noble and honorable declaration of principles in Maryland and from what we know of the president of the Association, great good may be anticipated.

Ice, a Conductor of Galvanism.

Prof. Dewey communicates to Silliman's Journal an account of a phenomenon that occurred while he was experimenting with a Grove's battery of eighteen cups. The Professor left the whole standing over night, the poles not being connected or the circuit not being closed. There was no action going on, or at least no hydrogen was evolved in the cups. Owing to a sudden change of weather, the liquid in the cups was found frozen next morning. In each of the cups, says the Professor, the local action was evolving hydrogen, which continued until he had separated the ice from the platinum, by means of a knife—when, in each instance, it immediately ceased.

An extraordinary circumstance happened during the late hurricane in the Island of Antigua. The house of an overseer on one of the plantations was raised up into the air and after being carried about 80 feet was turned upside down before it came to the ground: a mother with her child who were in at the time escaped with a few slight contusions.

Until very recently the Swiss authorities at Lucerne absolutely forbade the ascent of the Mount Pilate in order that the ghost of Pilate might not be needlessly disturbed, and storms thereby increased.

The great vine at Hampton Court Palace, though more than 120 years old, is now laden with more than 2000 bunches of grapes, estimated to weigh altogether nearly a ton.

The Cincinnati Reporter of the 1st inst. says there were 86,800 stoves manufactured in that city during the past year, of which 63,000 were shipped to other places. This business is rapidly increasing.

The printers employed in the Scarbro' Gazette, England, office have recently purchased a yacht which is to be named the Caxton, after the immortal founder of their art in England.

An advertisement in the Baltimore papers says seventy-five teachers are wanted for the Primary Schools in Baltimore county.

A Mr. Beckett has introduced one of Woodworth's Planing Machines into Hamilton, Canada. The Hamilton Gazette says that it will be a great saving to the lumber dealers around that portion of Upper Canada.

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The Electric Telegraph.

No. 3.

In our last we explained the nature and difference of Professor Morse's Telegraph from all others, viz. that it was based on the employment of "the soft iron magnet as a focus of motive power to register marks of intelligence at any distance from the battery by being connected with wires." To show that our opinion is correct we quote the claim of Prof. Morse and let it speak for itself. Morse's first patent, after describing the machinery by which he arrives at his result, concludes as follows, viz.—

"I do not propose to limit myself to the specific machinery, or parts of machinery. described in the foregoing specification and claims, the essence of my invention being the use of the motive power of the electric or galvanic current, which I call electro magnetism, however developed for marking or printing intelligibly characters, signs or letters, at any distances, being a new application of that power of which I claim to be the first inventor or discoverer."

This claim then, is for the *motive* power of the galvanic current, but he claims the power "however developed." But we will give the Professor's own explanation of this, in another place.

Having now come to this point, we will state our opinion to be, that there are four distinct Telegraphs based upon electricity as an imponderable matter that travels with an unlimited speed, by proper conductors. These four telegraphs are perfectly distinct and different in the principle of applying electricity to telegraphic purposes.

1st. There is the Electric Telegraph, which comprises that of Lomond, and Ronalds, the former in 1787, and the latter in 1816, in which the common electrical machine was employed.

2d. The Electro Deflective Magnetic Signal Telegraph. This is the same as Baron Schillings which was tried in 1832 before the Emperor of Russia, at St. Petersburg, also Gauss and Weber of Gottingen, Germany, in operation in 1833, and Professor Wheatstone's of London, in 1837. Schilling used no less than 60 wires, but Gauss and Weber used only a single circuit, while Wheatstone of London, travelling five years behind the Germans so *improved* upon their invention that he blunderingly used six wires. All these gentlemen employed the steel magnets in combination with the voltaic battery, and the deflection of the needle was the principle on which their inventions were grounded.

3. The Electro Magnetic Telegraph invented by Professor Morse in 1837. This is a recording telegraph and not depending on the deflection, "but the attractive power of the electro magnet to write in legible characters." This is Prof. Morse's own explanation of the difference.

4. The Electric Chemical Telegraph. This was invented first by Davy, in 1838, we believe, but it was a crude affair until it came into the hands of Bain in 1846. This Telegraph is very distinct from all the others, as no magnet is used whatever, and the galvanic current without any magnetic motive power writes legible characters.

There is another telegraph, which is a combination of the electro magnet and deflective magnetic telegraph. This was that of Dr. Steinheil of Munich, in Bavaria, and erected in 1837, the same year in which Prof. Morse publicly exhibited his in our own country.—Steinheil employed two permanent magnets moveable on their axis surrounded with a coil multiplier, but he wrote with ink and two pens,—and employed only one wire, using the dot, only for an alphabet, a very simple and beautiful improvement to the alphabet first used by Prof. Morse, which was a system of VV's, as will be seen by reference to the Franklin Journal of Oct. 1837, also the Journal of Commerce, Sept. 4, 1837.

From the descriptions given of Prof. Morse's Telegraph, in our papers, Europeans mistook its nature and thought it was a deflective Telegraph also, but its difference is very great, for all the deflective telegraphs are dependant on the movement of the magnet. Prof. Morse's Magnet, is immoveable. We will state here, that we believe Steinheil and Prof. Morse's telegraph to be entirely different, except both recorded their messages by marks upon paper—the difference then consists in employing the deflective motive power of the moveable magnet by the former, and the concentrated attractive power of the stationary magnet, by the latter.

We think that we have explained the difference between the four different kinds of telegraphs in such a manner that any person will understand the distinction. But as there has been much wrangling on this point, we will give the opinion of Prof. Morse himself as collateral testimony on the lines of *demarcation*. It is of no use to recapitulate the distinctive features of the *electric machine* telegraph and the electric chemical telegraph—as no magnet is used by them—their distinction, is apparent to all.

In reference to the difference between the electro magnet telegraph, and the deflective needle telegraphs, Professor Morse—in his letter to the Hon. C. G. Ferris, December 6th, 1842, says, "after the discovery of Oerstead, the deflection of the needle became the principle upon which the savans of Europe based all their attempts to construct an electrie telegraph." Under this head he classifies the names of those inventors we have mentioned. "But there was another discovery" he says "in the infancy of the science of electro magnetism, by Ampere and Arrago just after that of Oerstead, namely, the *electro magnet*, which none of the savans of Europe who have planned electric telegraphs ever thought of applying until within two years past. My telegraph is essentially based on this latter discovery. Supposing my telegraph to be based on this same principle with the European telegraphs, *which it is not*, mine having been invented in 1832 would still have the precedence, by some months at least of Gauss and Weber's, to whom Steinheil gives the credit of being the first to simplify and make practicable the electric telegraph.—But when it is considered that all the European Telegraphs make use of the deflection of the needle to accomplish their results, and that none use the attractive power of the *electro* magnet to write in legible characters, I think I can claim without injustice to others to be the first inventor of the *electro magnet* telegraph." Thus Prof. Morse considers his invention to be new and different from all the Europeans invented previous to 1840, and so do we, but we believe that Schilling and Gauss and Weber are entitled to priority as successful telegraph inventors. Steinhil we consider to be his compeer, as both exhibited their machines complete within two months after one another, and separated at a great distance. It is true that Prof. Morse claims the idea of inventing his telegraph in October 1832, while on a voyage from France to his native land in the ship Sully. This is not doubted, but the suggestive idea, was not an invention until the machine was operated in 1837. The difference between the conception, of an invention and the invention itself, is as great, as the difference between the scene in the artist's imagination before a brush has touched the canvas, and the picture after it receives the last touch of the pencil. Prof. Morse need not go back to 1832 to prove his original invention—1837 is the true basis, and a sufficient one, for the electro magnet telegraph is certainly superior to all the others invented previous to that period.

In a letter to Mr. A. Vail, see page 154 of Mr. Vail's work, Prof. Morse says "all the telegraphs in Europe, which are practicable, are based on a different principle" from mine. We have explained this difference and there is not the least doubt on our mind, that Prof. Morse stands firm on his original right of the inventor of the *electro* magnet telegraph, which is essentially different from others in principle.

In our next we shall treat of conflicting opinions relative to what a patent covers and what it does not.

To make up gold liquid for vellum ornamenting, grind up gold or silver leaf with honey in a mortar, then wash away the honey that remains, and use the powder that is left with gum water. It may be applied with a camel hair pencil.

The Results of Skill and Industry.

I have traversed (says a recent Western tourist) the great Erie Canal from one end of it to the other; I floated on the waters of the Ohio Canal; and I returned to the seashore by the Pittsburgh and Pennsylvania canals and railroads. What a magnificent excursion! What mighty triumphs of art and labor are here. What a moving of the affections! What an expanding of the imagination! How many beautiful and splendid visions have floated before the mind, which were surpassed by the great realities. Here were deep basins excavated and noble and long-stretching embankments, which rivalled the neighboring hills. Here were rivers, hundreds of miles in length, flowing at Man's pleasure, and in channels formed by his hands. Here were streams crossing streams on beautifully arched aqueducts. Here were mountains of granite pierced through and through and a passage opened through the the heart of adamantine barriers for vehicles freighted with human life. Here were deep inland oceans mingling their waters with the mighty seas that sweep from pole to pole; and bearing upon quiet tides ten thousand floating and deeply laden arks, myriads of human beings active in the pursuit of business or pleasure; accumulations of wealth from the deep and tangled recesses of the forest, now first springing into life under the touch of civilization from the glittering fields of polar ice, and from the shores of the Western Ocean; accumulations whose growing extent defines all calculations. All this too, is the work of a little animal of the ordinary hight of sixty inches with only two feet and two hands and of an average duration of life less than twenty years. His mighty implements a hoe, a pick-axe and a spade! Such are the results of intelligent, concentrated, persevering Labor.

Boat.

A small open vessel adapted either for rowing or sailing. The boats belonging to a *ship of war* are as follows:—The *launch* or *long boat*, which is the largest on board and is built full, flat and high so as to carry a great weight. The *barge*, next in size, of a slighter frame rowed with ten or twelve oars, and intended for carrying commanding officers to or from the ship. The *pinnace*, of a similar form, but somewhat smaller than the barge, pulling six or eight oars; it is for the accommodation of the lieutenants and subordinate officers, &c. or is used instead of the barge for the smaller classes of ships. *Yawl*, a boat of the same description as the pinnace but somewhat smaller. (The above mentioned boats are all carvel built.) *Cutters*, which are clinker built and are shorter and broader in proportion to their length than the long-boat; they are used for the conveyance of stores, &c. The *jolly-boat*, similar to that of a merchant vessel.—*Gig*, a long narrow boat, also clinker built, adopted for rowing expeditiously and also for sailing; usually belongs to the captain. The boats belonging to *merchant vessels* are: The *launch* or *long-boat*, already described. The *skiff*, next in size, used for towing, running out a kedge, &c. The *jolly-boat*, or *yawl*, the third in size: kept for shore purposes and other light work. It is very commonly called the *stern-boat*, if hung to davits over the ship's stern. The *quarter-boat*, which is so called from being hung over the ship's quarter: it is longer than the jolly-boat; some vessels are provided with only one quarter-boat: others have a boat over each quarter. The *captain's gig* frequently forms one of the quarter-boats. It may here be remarked that under policies of marine insurance, the loss of boats lashed to ring-bolts on deck, or to the quarters, is allowed but not so if hung over the ship's stern.

Varieties of Milk.

As far as we know, no nation uses the milk of any carnivorous animal. There is no reason for believing that the milk of this order of animals would be either disagreeable or unwholesome: but the ferocity and restlessness of the creatures will always present an obstacle to the experiment. The different milks of those animals with which we are acquainted agree in their chemical qualities, and is confirmed by the fact, that other animals beside man can be nourished in infancy by the milk of every distinct species. Rats and leverets have been suckled by cats, fawns by ewes, foals by goats, and man, in all stages of his existence, has been nourished by the milk of various animals, except the carnivorous. The milk of the mare is inferior in oily matter to that of the cow but it is said to contain more sugar, and other salts. The milk of the ewe is as rich as that of the cow in oil, but contains less sugar than that of other animals. Cheese made of ewe milk is still used in England and Scotland, but it is gradually being disused. The milk of the ass approaches that of human milk in several of its qualities. To this resemblance it owes its use by invalids in pulmonary complaints, but it has no particular virtue to recommend its preference, and is only prescribed by nurses. Goat's milk perhaps stands next to that of the cow in its qualities; it is much used in Southern Europe. It affords excellent cheese and butter, its cream being rich, and more copious than that from cows. Camel's milk is employed in China, Africa, and, in short, in all those countries where the animal flourishes. It is, however, poor in every respect but still being milk, it is invaluable where butter is got to be procured. The milk of the sow resembles that of the cow, and is used at Canton and other parts of China. The milk of the buffalo is also like that of the cow, though the two animals belong to different species. Every preparation of milk, and every separate ingredient of it is wholesome; milk, cream, butter cheese, fresh curds, whey, skimmed milk, buttermilk, &c. Butter-milk and whey will undergo a spontaneous vinous fermentation if kept long enough, and alcohol can be distilled from it. The Tartars it is well known prepare large quantities of spirituous drink from mare's milk.

How to acquire Cheerfulness of Mind.

But, says, one, what has this to do with health? More than words can express, in consequence of the fact, that bodily health depends very much on the state of the mind. Now for some of the means. First, you are enjoined to "think innocently upon all things." You reply that this is not practical, when there is so much evil without, as well as within us. It is a maxim of divine Wisdom, that "to the pure all things are pure:" of course the opposite is equally true, that to the impure all things are impure. Hence the great importance of cherishing right principles and right motives: if, then, we think from right and good affections, we cannot but think innocently about all subjects; for as is the principle of our thought such is the thought itself; and thus thinking from pure motives in ourselves, we thereby change the evil into good; either in the way of example for the avoidance, and strengthening of ourselves in the good of innocency by the contrast, or by suggesting a remedy for the evil, and correcting the instigation thereto in ourselves as well as in others. The cultivation of a chaste principle of thought, from good affections, will inevitably lead and dispose us to think innocently on all subjects; and this will produce a heavenly state in the mind, and consequently angelic cheerfulness, which is perfect health, &c.

Scientific Prohpecy.

About nineteen years ago Mr. Hait, of Wilton, Ct., then a remarkable good student in his collegiate course, was suddenly deprived of his reason and memory. In those circumstances his father, Rev. Mr. Hait, sent him to Hartford; but finding no relief he sent him to Dr. Chaplain, of Cambridge, Mass. The Dr. said that there was no relief for him at that time,—but at the age of thirty six or seven, there would be a change; that the brain was too much expanded for the cranium, and there would at that age be a contraction which would enable it to act healthfully.

His anxious father and family saw their hopes peremptorily deferred for 19 years.—That time has recently expired and to their great joy the prophecy is fulfilled. The man began to enquire after his books as if he had just laid them down and resumed his mathematical studies where he left them.

There was no trace on his mind of this long blank in his life or of any thing which had occurred in it and he did not know that he was almost forty years of age.

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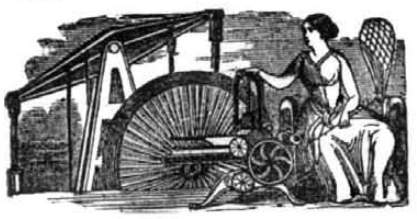


New Inventions.

Self Priming Fire Lock.

Mr. Walter Hunt, of this city, has invented a very neat and valuable self priming lock. There is a small priming chamber by which the gun is supplied while in the act of setting the hammer, which deposits a priming of percussion powder, which is struck by the hammer point and explodes the priming—thus acting as a very superior substitute for the percussion cap.

By our late foreign oxchanges we perceive that a pistol has been registered in London, under the act for the protection of articles of utility, which is so ingeniously contrived that it primes and loads itself by the most simple and unerring operation.

Kyanized Cordage.

Messrs. J. T. Crook & Co., of Louisville, Ky. have manufactured cordage from unrotted hemp, which is so kyanized or cured by antiseptic substances as not to be liable to decay. Cordage prepared in this way is said to have been exposed in a heap of decayed vegetable matter for five years without showing the least sign of decay. It has a good color, almost as light as Manilla. The Louisville Journal says that most of the flatboats which recently left this place were supplied with lines of this kind, and some of them are said to have stood some very severe tests as it regards strength.

Common hemp lines for navigation are very liable to decay and this new cordage must be a valuable discovery and in the end entirely supercede the foreign Manilla, it being cheaper and stronger.

Probably this cordage is kyanized with a solution of tannin and chloride of tin.

Ice Machine.

A machine has been made in Cincinnati for the manufacture of ice, which the Gazetteer says, turns out huge blocks of ice in a few seconds. It seems to be considered a very valuable invention, but as its construction has not been set forth, it, being a machine, must produce the ice in some manner by the formation of vacuum. A patent was secured in England about two years ago, for a machine to accomplish the same object which not only made blocks of ice, but could make them of any form. Although the London papers boasted of its advantages, and predicted the decease of our Eastern ice trade, yet ice is shipped from Boston and always will be, while nature's laboratory exists free as the air and boundless as our waters.

New System of producing Engravings.

Mr. F. B. Nichols, late of Bridgeport, Ct., but now of this city, has discovered a new mode of producing engravings, which by very little more trouble than merely drawing the figures, &c., lines in relief, the same as wood cuts, are produced. We have seen some samples of plates produced by this system, which looked very neat, but it is yet in its infancy. Where there is much cross lining there can be no doubt of its superiority.

Mr. Nichols assures us that engravings can be made by his process for one half of what they can be made for on wood.

Rotary Mould Board Plough.

At the Fair, the most novel agricultural implement, was a revolving Mould Board Plough, the invention of Mr. Page of Baltimore. The mould was a circular concave conical shield revolving from the point with the sod or earth. This mould board was moveable and could be taken off and put on at pleasure. Whether its complexity will prevent its general introduction or not, remains yet to be seen. Its principle is the combination of a revolving apron to move with the earth, and perform the same office as a friction wheel in a shaft box.

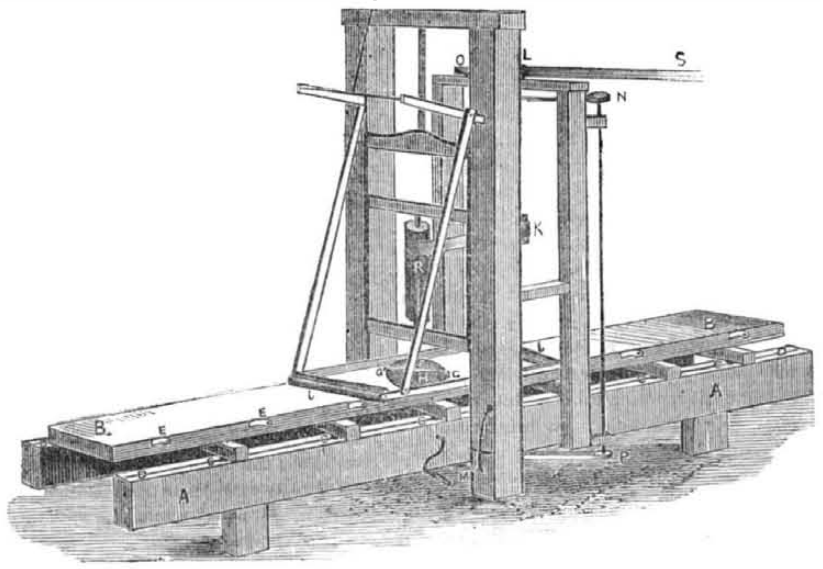
A New Steering Apparatus.

A new steering apparatus has been invented by Messrs. Clark & Pirnie of Newburg in Fife, Britain, which is now deserving of some notice as it is nearly akin to some steering apparatus that has been exhibited in our city. It consists of an endless screw revolving between two metal blocks fixed in the deck at one side of the shaft of the steering wheel, and parallel to it : abaft the rudder-head there is a spoket wheel on the shaft of the steering-wheel, and another spoket wheel of the same diameter immediately opposite to it on the shaft of the screw, with a pitch chain over them for driving the screw. The latter acts upon the segment of a toothed wheel (serving the purpose of a tiller) fixed on the side of the rudder head. The main advantage of this contrivance is, that any strain on the rudder can never have the effect of turning the screw round in either direction, while the screw acts with ease in directing the movement of the rudder. Between each end of the screw shaft and an abutment on the metal block, a piece of cork is introduced for the purpose of giving the rudder a little play in a heavy sea.

One steering apparatus exhibited at the Fair, is something like the above, only the segment of a large grooved pully with the chain working in the groove is attached to the rudder-head, and used instead of a toothed wheel.

DANIEL'S PLANING MACHINE.

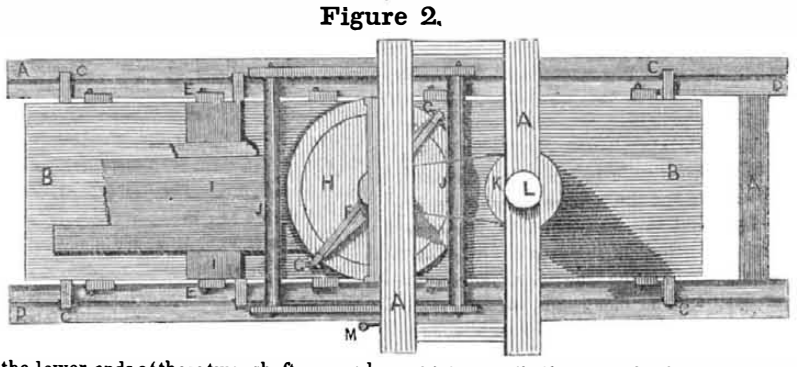
Figure 1.



Among the many Wood Planing Machines that have been invented and which are at present in use, no one is better adapted for some purposes, than the one which we have here represented in these two engravings. For wood that is somewhat rough, and when the work is not required to be exceedingly fine, perhaps it is the best machine in use, at any rate, it should never be absent from any small country saw mill where there is power to drive it, for certainly it will soon pay for itself, as it is exceedingly cheap, simple and strong, seldom needing repairs—the grand desideratum in all kinds of machines.

Description —Fig. 1, is a perspective and fig. 2, a top, or view of the machine looking down upon it. The same letters indicate like parts on both engravings. A, represents the frame. B B, is the moveable bed plate, C C, are transverse under bars. D D, is an iron rail on the upper surface of A, and there is a small groove in the transverse bars to slide on the rail as the bed is carried backwards and forwards. E E, are lappets to wedge in, by turning them up and slacken the board by turning them down. F F, is the revolving cutter arm or stock, fig. 2, and G G, are the cutter knives or gauges on the extremities of said arm. H, is a disc which is secured to the frame so as just to allow the board to pass under it, yet to exert a pressure on the board so as to let the whole face of it, however warped, be subjected equally to the action of the cutters, which plane by their rotary motion at the outside of this disc. J, is a heavy roller suspended on the frame and pressing on the board to graduate or smooth the warpings towards the cutter. I, fig. 2, is a board in the act of being planed. S is the main driving band and L is a pulley on a vertical shaft behind the upright post. N, is a vertical shaft on this side of the machine.

Figure 2.



On the lower ends of these two shafts are pulleys which by bands move small stub shafts with pinions under the moveable bed B,—the pinions meshing into the rack and carrying backwards and forwards the bed with the board to and from the cutters. The reverse motion is given by the handle M, carrying the bed or table, as it is sometimes called, to and from the revolving cutters. The motion is changed by the lever of M, which moves a clutch in the usual way. K, is a pulley on the driving shaft, which by a band passing around R, as seen in fig. 2, drives the cutter shaft.

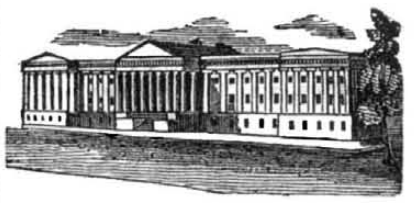
The operation of this planing machine is so simple, that every one who reads this description will understand it, and although it has been patented some time, yet an understanding of its construction and operation will no doubt be of interest to many.

We have now on hand one of these machines which we will dispose of for the very low sum of $250. It is capable of planing boards, timber, or any stuff from one fourth to 16 inches thick, by 1 to 22 inches wide and 16 feet long. It is so simple as to be easily managed by a boy, and operates with great rapidity and beauty. Any number of pieces of different thicknesses or lengths, can all be planed down even at one operation. It performs a day's labor of one man in 20 minutes.

We can ship it to any part of the country with perfect safety. Letters may be directed (post paid) to Munn & Co., Scientific American Office, New York.

New Tile.

A very ingenious description of tile is being manufactured for the use of his estates, by Rigby Wason, Esq. of Corwar, England, consisting entirely of peat and cut out of the moss by an instrument for the purpose.



LIST OF PATENTS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending Oct. 24, 1848.

To Thomas Paton, of Providence, R. I., for improvement in making Mills and Skeleton Dies for Printing. Patented Oct. 24, 1848.

To Robert Calwell, of Near Nashville, Tenn , for improvement in Saddles. Patented Oct. 24, 1848.

To D. George and H. Robertson, of Granville, Ohio, for improvement in cutting irregular forms in Wood. Patented Oct. 24, 1848.

To J. S. Vedder, of Schenectady, N. Y. for improvement in the Apparatus for raising Water. Patented Oct. 24, 1848.

To New England Glass Company, assignee of Jos. Magoun, of Cambridge, Mass., for improvement in Moulding Glass. Patented Oct. 24, 1848

To Jarvis Howe, of Worcester, Mass., for improvement in Boot Trees. Patented Oct. 24, 1848.

To John R. Rowland, of Philadelphia, Pa., for improvement in Pessaries. Patented Oct. 24, 1848.

To James Dane, of West Derby, Vt., for improvement in Brick Presses. Patented Oct. 24, 1848.

To Enoch Hidden, of New York City, for improved Ship's Light. Patented Oct 24, 1848.

To Seth E. Winslow, of Kensington, Pa., for improvement in Lamp Tops. Patented Oct. 24, 1848.

To Mathias P. Coons, of Lansingburg, N. Y. for improved Rock Drilling Machine. Patented Oct. 24, 1848.

To Samuel Cronce, of Flemington, N. J., for improvement in Machines for Creasing Leather Straps. Patented Oct. 24, 1848.

To Eli Saunders, of Weathersfield, Vt., for improvement in Horse Rakes. Patented Oct. 24, 1848.

To Zephaniah Knapp, of Pittston, Pa., for improved method of fastening Wire to Fence Posts. Patented Oct. 24, 1848.

To Lyman P. Judson, assignee of J. D. Willoughby, of Susquehanna, Pa., for method of working Lock Gates by water power. Patented Oct. 24, 1848.

RE-ISSUE.

To Samuel Colt, of New York City, for improvement in Revolving Fire Arms. Patented Feb. 25, 1846. Re-issued Oct. 24, 1848.

DESIGNS.

To George W. Rathbun, of Leroy, N. Y., for Design for Stoves. Patented Oct. 24, 1848.

To Lowell Manufacturing Company, assignee of Peter Lawson, of Lowell, Mass., for Design for Carpets. Patented Oct. 24, 1848.

INVENTOR'S CLAIMS.

Screw Thread Machine.

Henry L. Pierson, assignee of John Crum, of New York City. for improvement in screw threading machine. Patented September 19th 1848. Claims the carrying wheel on the reciprocating carriage operated substantially as described in combination with the dies in the jaws of the mandrel substantially as described, whereby the stem of the screw is moved in and out the chasing or cutting of the thread of the screw, by a series of operations as described. Also the method of holding the blanks in the rim of the carrying wheel by combining with the rim of the wheel a pressure roller substantially as described. And finally I claim the method of increasing the depth of the cut of the chasers or dies in the jaws of the rotation mandrel for each cut in the series by the threading cane and the wedge formed slide, operated substantially as described, in combination with the carrying and holding wheel as described.

Andrew Meneely of West Troy, N. Y. has cast and sold 400 of his incomparable bells during the past year.

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NEW YORK, NOVEMBER 4, 1848.

Honor to whom Honor is Due.

In our leader of last week, we made this remark, that " many men esteemed for honor and probity in private life, seemed to have no qualms of conscience in appropriating to themselves the scientific discoveries or inventions of others." The ink was scarcely dry upon our sheet when the European Steamer arrived and among other news in our foreign files, we perceive a celebrated painter—a member of the Royal Academy, Mr. Reinagle, has been detected in the most despicable act of exhibiting a beautiful painting as his own production, which was the work of a young artist named Yarnold. Mr. Reinagle is reported to have resigned his office, and certainly it was high time for him. But we venture to say that there are more members of the Royal Academy, and in every one of these aristocratic purse proud associations, whose honors are as stolen waters. It has lately been discovered that the celebrated work of Paley on Natural Religion, is a gross piece of plagiarism, from the writings of a Dutch author. If an inventor happens to be poor, ten chances to one, if his invention does not come out, some how or other to be that of some *numbscull*, who had craft to steal and wealth to take advantage of the poor man's necessity.

The Dignity of Labor.

This is a subject which at present is engaging not only a numerous host of heads and hearts, but a numerous host of pens also. We seldom take up a paper which does not contain an original or copied article on labor and its dignity. In treating upon this, like every other subject, the old adage is faithfully verified, " many men, many minds." Some treat the subject as if manual labor and brute force were synonimous, and that in severe toil lay the man and a buried dignity. Others treat the subject with a perfect, and we must say a crazy disrespect for every kind of labor but agricultural or mechanical. Others again, and by far the most consequential class, look upon all kinds of physical labor as indicative of an inferior understanding and an inferior race of beings.

It is almost needless for us to say, that all these views are erroneous—we wish that we could indelibly impress the heart of every man and woman with Pope's idea of a man—" Worth makes the *man*, the want of it the fellow." All kinds of honest labor are alike respectable. We have not a word to say about the drones—they are not worth a paragraph, and apart from personal worth, no occupation or profession should gild a man with false dignity. We may talk about the dignity of labor as we may, but what we want, is the appreciation of its value—to make the workman himself feel that he is a nobleman, when an honest man. It is the absence of this feeling in the working classes that has led them to be too lightly esteemed by the more wealthy classes. It is no doubt true that poverty robs a man of his independence—yes, this is a fact, and one on which all our people should deeply ponder. If we look abroad to other lands, we behold excessive pride and tyranny in one class, coinciding with misery and squalid poverty in another class—there we behold the castle and the hovel—the palace and the clay built cot—pride on the one hand, poverty and dependence on the other.

If our mechanics' self respect is to be maintained, they must be always well remunerated, without this, the laborer will lose his dignity of feeling. It makes no matter how much people may talk of the dignity of labor, experience has established the fact, that worth, however much admired in the abstract, never looks very graceful in rags. It is true that this is not right—that it says little for our common sense or common humanity, but while it is a *fact*, it is the best part of wisdom to prevent the effect by the removal or absence of the cause. In America, the mechanical classes know not the philosophy nor the religion that succumbs to wealth or power—may they never be subordinate to the one or the other. If the past is of any use at all as experience to guide, if the present in other nations is of any use at all to warn and exhort, we would bid those who so zealously lecture, and talk of the dignity of man, never to forget that where labor is not duly rewarded, it is a sure sign that it is not duly respected—that it is robbed of its dignity and shorn of its independence. Let those who wish well for their country, think of these things.

Patent Case.—Purifying Tallow.

At the U. S. Circuit Court, before Judge Betts, held in this city last week, a case was tried for an infringement in the mode of preparing tallow for the manufacture of candles. Mr. Kirkman was the plaintiff and Mr. James Buchan, of Elizabeth st., the defendant. Damages were laid at $10,000. The patent was for preparing the tallow without pressing, so as to make candles in the hottest of weather. This was done by means of a vat or cask with a false bottom, perforated with holes, and the water thrown over, and a tub to receive the oil. The defendant denied the validity of the patent, on the ground that " it was not a new discovery," that the mode alluded to in the patent to place the tallow in a vat, the room being of a certain temperature, and cause the oil to drain by means of a false bottom perforated with holes, &c., was not new, having been in use, as regards the principle, for a long time, and that tallow was so prepared by Mr. Winship, of Cambridge, Mass., and by others, for more than twenty years ; also that Mr. Kirkman was not the discoverer of the particular plan designated in his patent. Neither of the parties, it was said, had been bred to the business. Mr. K. was a painter, and went into the soap and candle manufactory trade in 1840. Mr. B. had been in the hardware business and went into this trade in 1838. Both parties, therefore, had at first to employ men well acquainted with the business.

On Saturday last the Jury returned a sealed verdict for Mr. Buchan, the defendant—basing their decision upon testimony, that the process described in the patent was in public use previous to the period when the patent was granted.

Telegraph Injunction.

Mr. Morse's Patentees have asked a further injunction against O'Reilly. It appears that since the latter's Southern line (Ky.) has been prevented from making marks as a means of telegraphic communication, the operators telegraph by the sounds, or clickings of the instrument.

Morse's claim we believe covers sounds as well as marks.

Bung Machine.

The Bung Machine illustrated and described in No. 4 of this volume, is now in successful operation at No. 35 Cross st. this city, where it is well worth the visiting by all who are interested in these things. In our description a mistake was made in the name of Mr. Doughty, which reads " Dowdy."

Distances Between this Country and England.

BY MERCATOR'S SAILING.

Boston to Liverpool, : :	2884 miles.
Battery, N. Y. to Liverpool, :	3084 "
Boston to Southampton, : :	2883 "
Battery, N Y, to Southampton :	3156 "

BY MERCATOR AND GREAT CIRCLE.

Boston to Liverpool, : :	2849 miles.
Battery, N. Y. to Liverpool, :	3023 "
Boston to Southampton, : :	2849 "
Battery. N. Y., to Southampton,	3087 "

These calculations allow for the detour made by the British steamers in touching at Halifax, and from them it will be seen that the Boston steamers, supposing them to sail on the Great Circle (as they usually do) on the outward passage to Liverpool, have an advantage over a New York steamer bound to Southampton of 307 miles, or about one eighth of the whole distance. A steamer from New York to Liverpool has 72 or 64 miles less to sail, according to the respective modes of sailing, than the Southampton steamer from the same port.

For Inventors to Read.

We give place below to an extract from a letter from one of our Western subscribers showing the benefit he has derived from the mere publication of an engraving of his invention in our paper. We have often mentioned the importance of this mode of introducing inventions and we again repeat it, hoping that many inventors will profit thereby. The large circulation of the Scientific American makes it a most valuable medium for giving publicity to inventions and there is nothing which so quickly calls the attention as an engraving. Those who have rights or machines to dispose of should by all means avail themselves of this mode of making it publicly known. The cost of an engraving is trifling.

MESSRS. MUNN & Co.—*Gentlemen.*—Enclosed you will find eight dollars, two dollars for my subscription to the Scientific American and six dollars for one of your Camera Lucidas. * * * * I cannot let this opportunity pass without informing you of the great benefit I once derived by following your advice and availing myself of the facilities offered through your paper. About two years since I read an article in which you strongly urged upon inventors the importance of having engravings of their inventions published in the Scientific American. Some time previous I had patented an invention which I considered a valuable one, but from some reason nobody would use or buy it and so I gave it up as bad property. When I saw the opportunity offered through your paper I determined to have you publish an engraving for me and accordingly forwarded my drawing.—In due time the engraving appeared and the result was, that in a short time I was beseiged with letters from all parts of the country relative to my invention, and I finally concluded a sale of it for $4000. With this money I bought me a fine farm, well stocked, and am now as well situated as any one could wish to be. All my present prosperity I owe, under Providence, to having published an engraving of my invention in your paper. I consider it the most usetul newspaper in the United States and would not be without it under any considerations. * * * * * * * * *. J. B.

Joliet, Ill.

Bennet's Great Pump again.

The St. Louis Reveille says that they have witnessed the operation of the pump for raising sunken boats, (which we noticed last week) and it is thus further described. " It is formed by two cylindrical iron tubes, one inside of the other, with a conical shaped base, having an opening to admit the water. A flange having fans placed upon its face is fastened to an upright shaft, to which gearing is attached connected with the steamer's water wheel, and the same engine used to propel the boat works the pump. The centrifugal force created by this flange within the inner tube forces the water up the outer one, with a velocity and in a quantity truly astonishing. The inventor's estimate is one thousand barrels per minute, and from observation we should judge he claims less power than its real force. The action of the machine produces such great commotion in the water, that the sand in the sunken hull will be put in motion and raised by the pump. The proprietor has large canvas cloths to place beneath a damaged hull, by which to close up leaks, and the suction of the machine acts with power sufficient to draw these covers close to any opening in the vessel.

This description appears to be an exact counterpart to a description of Schmidt's Rotary pump, exhibited at the Fair.

Newspapers by the European Steamers.

Postmaster General Johnson has ordered that newspapers for editors and newspapers sent as freight shall not be charged with U. S. postage and that they shall be delivered from the steamer without passing through the Post office. Should he find, however, that the British government pursues a contrary policy toward American newspapers, he reserves the right to retaliate.

The French Canadian population are said to be emigrating in large numbers to the United States.

Chemical Character of Steel.

The following opinions of Mr. Nasmyth regarding the chemical character of steel expressed before the Scientific Association will be found to be new snd worthy of consideration Mr. Nasmyth says: " Were we to assume as our standard of the importance of any investigation the relation which the subject of it bears to the progress of civilization, there is no one which would reach higher than that which refers to the subject of steel: seeing that it is to our possession of the art of producing that inestimable material that we owe nearly the whole of the arts. I am desirous of contributing a few ideas on the subject with a view to our arriving at more distinct knowledge as to what (in a chemical sense) steel is and to lay the true basis for improvement in the process of its manufacture. It may be proper to name that steel is formed by surrounding wrought bar iron with charcoal placed in fire-brick troughs from which air is excluded, and keeping the iron bars and charcoal in contact and at a full red heat for several days, at the end of which time the iron bars are found to be converted into steel What the nature of the change is which the iron has undergone we have no certain knowledge ; the ordinary explanation, is, that the iron has absorbed and combined with a portion of the charcoal or carbon and has in consequence been converted into a carburet of iron. But it has ever been a mystery that on analysis, so very minute and questionable a portion of carbon is exhibited. It appears that the grand error in the above view of the subject consists in our not duly understanding the nature of the change which carbon undergoes in its combination with iron in the formation of steel. Those who are familiar with the process of the conversion of iron into steel must have observed the remarkable change in the outward aspect of the bars of iron after their conversion, namely, that they are covered with blisters. These blisters indicate the evolution of a very elastic gas which is set free from the carbon in the act of its combination with the iron. I have the strongest reasons to think that these blisters are the result of the decomposition of the carbon, whose metallic base enters into union with the iron, and forms with it an alloy, while the other component element of the carb on is given forth and so produces in its escape the blisters in question. On this assumption we come to a very interesting question—What is the nature of this gas ? In order to examine this all that is reqnisite is to fill a wrought iron retort with a mixture of pure carbon and iron filings, subject it to a long-continued red heat and receive the evolved gas over mercury. Having obtained the gas in question in this manner, then permit a piece of polished steel to come in contact with this gas, and in all probability we shall then have reproduced on the surface of the steel a coat of carbon resulting from the reunion of its two elements, viz. that of the metalic base of the carbon then existing in the steel, with the, as yet unknown, gas, thus sythetically, as well as by analytic process, eliminating the true nature of steel, and that of the elements of carbon.

Reverencing the Sabbath.

An amendment to the law on the hours of labor to the effect that no employer should be allowed to hold his workmen to work during Sunday, was passed unanimously at the Na· Assembly at Paris.

We have some hopes of France now. Well spent Sabbaths lead to well spent weeks.

THE
SCIENTIFIC AMERICAN.

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Planing Machines.

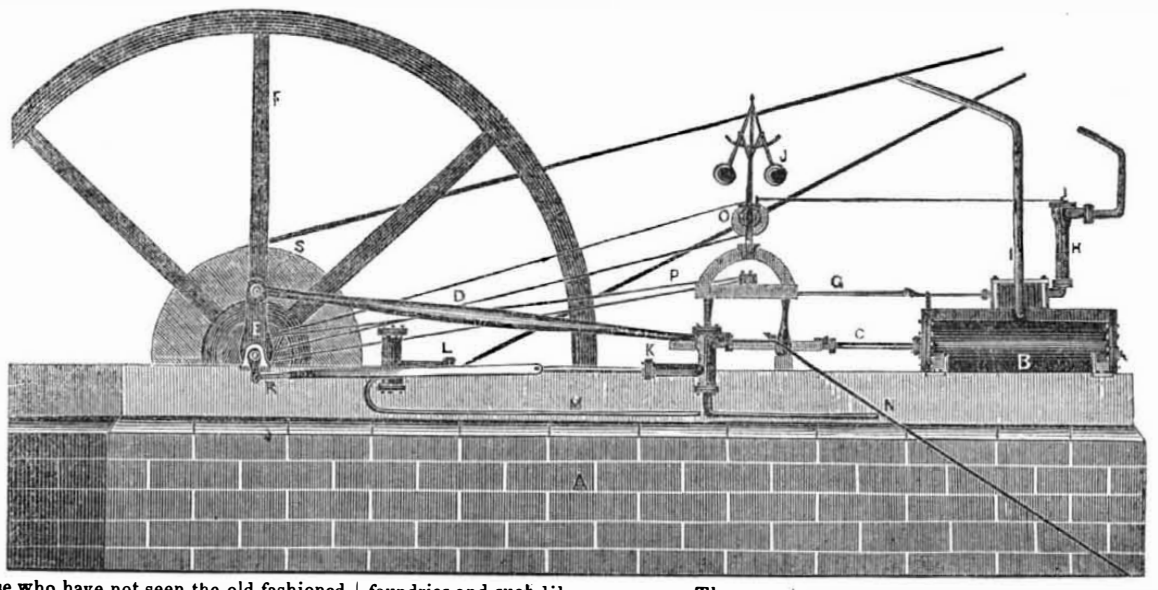
(*Continued from our last.*)

Of these transverse bars, the foremost, it is evident, cannot at that end of it which points to the saw, extend beyond the saw; since if it did, it would be cut off by it: the hinder may or may not, according as the purpose requires or not, that it should pass the saw. The longitudinal bar thus furnished with two transverse ones, forms what I term the slider. To diminish the friction between this bed and the bench or floor on which it slides friction rollers may of course be applied and that either to the bench or to the bed. To this slider make fast the rough piece by any means and so shove it along from end to end against the saw; the consequence is, that if the saw be deep enough either the piece will be simply cut to an even surface on one side or it will be cut into two distinct pieces, each having one such even or flat side. Fix now one of these pieces on the slider with the flat side downwards; shove it against the saw as before and in this manner this piece will acquire a second smooth side contiguous to the former, or be cut into two other pieces each having two such contiguous smooth sides.—The angle formed by these two contiguous sides will be a right angle, while the upper surface of the bench is parallel with the saw spindle: but if it be required to give the piece any bevelling, this may be done by making the bench to turn or tilt on pins or gudgeons like that above described for cutting to any bevelling by up-and-down saws; or the saw-spindle may be made to tilt, the bench remaining fixed: or, the bench and spindle remaining as before, the piece itself may be tilted and confined to the slider so as to meet the saw at the angle required.—Pieces of any figure by being confined to this slider by stops and supports may be cut lengthwise or transversely, to any angle or length. In speaking of cutting from the rough we showed how to give a piece two straight sides; as to the remaining sides though the piece might be fixed to the slides again, yet, to save the time that might be consumed in adjusting and confining the piece according to the dimensions required the following method may be employed: let a bar of wood or metal which we will call a guide be applied to the bench longitudinally, in a direction exactly parallel to the saw and (as in general it will be more convenient) not on the same side as the slider is. This guide should move so as to be set at different distances from the saw, preserving always its parallelism with respect to the saw. If the piece to be cut be applied with one of its flat sides lying on the bench and another pressed flat against this guide, advance it now against the saw and so much as extends beyond the saw will be cut off, and thus another flat side will be given to the piece and so on for any other side or sides: the distance of this guide for the saw will, it is evident, give the thickness or breadth of the piece to be cut, and, the same distance being preserved, any number of pieces may be cut exactly to the same thickness or breadth.

To cut a piece taper or wedge fashion,—provide a wedge of the degree of taper required; apply this wedge to the longitudinal guide; then, applying the piece to the other side of the wedge, shove up piece and wedge together as you would the piece alone to cut it parallel-wise; this contrivance may equally be applied to the up-and-down saw. Where a very thin saw is employed in roughing out a piece, there is a case in which its thinness, though supported by guides, like those to the up and down saw, might render its work less true; that is, where the quantity of matter it has to detach in different parts is so unequal, as that, on one side having here and there nothing to cut off, it would be thrown off to that side, and bent out of its course by the inequality of resistance. To obviate this danger the flanch on that side may be made to extend nearly to the root of the teeth; at which place it should be chamfered off to nothing, so as, by the inclination of its surface, to wedge off as it were, and so bend or break whatever it finds on that side. Where the diameter of such a saw is considerable, the saw, instead of being one piece, may be more advantageously composed of annular segments fastened on the face of the flanch.

(*To be continued.*)

A HORIZONTAL ENGINE.



Those who have not seen the old fashioned engines are scarcely able to judge of the great improvements which have been made within a few years both in their construction and arrangement. Having come into possession of a very beautiful, strong and well finished horizontal engine of sixteen horse power,—all complete and in running order, which we will sell for the low price of $1250, we conclude to publish this engraving of it and explain its parts and convey an idea of what it is in itself.

A, is the frame. B, the cylinder. C, the piston rod. D, the connecting rod. E, the crank. F, the fly wheel. G, the rod for working the slide valves which are operated by an eccentric on the small shaft in the middle of the arch, which shaft with a pulley on it, is driven by a band P. H, is the steam pipe, by which the steam is admitted from the boiler. I, is the exhaust pipe. J, the governor, connected with the main shaft by band O and pulley, and with the steam pipe by the small rod seen above G. K L, are the two feed pumps worked by one connecting rod R. M N, are the two discharge pipes of the said pumps. The small pipe on the outside is the supply pipe. S, is a large pulley on the main shaft to drive the machinery.

The horizontal engine, has superseded every other kind for factories, saw mills, foundries and such like purposes. They can be built at less expense than the walking beam kind and beside they are more easily attended. Some have objected to horizontal engines, as being liable to wear out of line in the under part of the cylinder. This objection has a sound and reasonable appearance, but we are convinced from the testimony of a number of good engineers, that experience has proven it to be incorrect—cylinders of horizontal engines, after having been used daily for years, have exhibited no signs of uneven wearing.

As before stated the above engine is of 16 horse power nearly new and in complete running order. It has been used a little less than 6 months, just enough to make it run smooth, and we consider it better than a new one because it has been tested and all its pipes connections, &c. are fitted and attached. It may be run from 2 to 16 horses power as desired, or even more, with a corresponding graduation of fuel, which in New York to drive it 16 horses power, 12 hours per day, costs $5 a week. In the country the cost of fuel would be much less as wood can be had far cheaper than in this city. The boiler attached to this engine is a cylindrical one and is built in the most substantial manner. It is calculated for wood or coal. The following on the next column are the dimensions of the engine, boiler and fly wheel:—

ENGINE.

Cylinder 11 inches diameter.

Stroke 28 inches.

Governor, pumps and *every thing belonging to the most approved engines are attached.*

BOILER.

Length 23 feet.

Diameter 3 feet.

Return Flue. Warranted at 100 lbs. pressure for constant use. Will bear 150 lbs. with perfect safety.

FLY WHEEL.

Diameter 11 feet.

Weight 2300 lbs.

We will ship the above engine and boiler *with all their appurtenances* to any part of the United States desired, for the very low sum of $1250. Their cost when new was $2000. It is only the pressure of the times in this part of the country that enables us to dispose of them at such a great discount from their cost. Any one who wants a first rate engine and boiler with everything complete will find this an uncommon opportunity.—We will warrant them to be as here described and those who wish, can see them in operation or have them examined by a competent engineer before purchase.

Letters may be directed (post paid) to Munn & Co. Scientific American Office, of whom any further information may be had,

Our Mechanics.

Many, but they are growing less in number, are too apt too sneer at the mechanic as if man can blush at a calling which the great Mechanic of the Universe stamped with especial favor.

His divine Son was not only clothed with the garb of humanity but he was even an humble carpenter. And yet a mechanic is by some deemed unworthy of association with the magnates of the land.

What individual possessing the genius of an Eckford or a Rhodes, would exchange it for the tinselled glories of a rent-roll which lead to the idle dissipations of fashionable life or to be the ephemeral flower around which sport the butterflies of the earth. Every youth, should be taught some trade, for without such knowledge he is more or less dependant upon the freaks of fortune. "Riches have wings" is an adage as trite as it is true, and with the experience of life before us, who would not when the flood of misfortune or the fire of adversity sweeps away human hopes, wish sincerely wish that he too were a mechanic. The progress of our country in the scale of nations—the march of mind on the land and on the water is hastened by the improvements developed in the mechanic arts.

Who can observe the power of the steam engine not only impelling the massy vessel with speed through the waters but successfully combatting the mountain wave and the furious gale, without being lost in wonder at that intelligent mind which has wrought out machinery so complicated yet so perfectly simple as by obeying the power of steam, to annihilate space and reveal to the eye of commerce nations and people but little known.—Look too at the benefit to the human race conferred by machinery in manufactures, in preparing the tree of the forest for the shipwright and house-carpenter and in all those uses to which it is applied, and the glory of the Bar eclipses not the glory of the Mechanic who has contributed to these results.

We speak not here of the Press without which the mind would be clipped of those wings enabling it to take its eagle flight and to soar beyond those confines from which the Art of Printing released it.

Its prison house has been demolished and the light of science like the light of the solar system pierces into the hovels of the poor man, as it irradiates the palaces of the wealthy.

A writer has truthfully observed:—"Mechanics are the palace-builders of the world; not a stick is hewn nor a stone shaped in all the lordly dwellings of the rich that does not owe its beauty and fitness to the mechanic's skill; the towering spires that raise their giddy heights among the clouds, depend upon the mechanic's art for their strength and symmetry. Not an edifice for devotion, for business or comfort but bears the impress of their handiwork. How exalted is their calling—how sublime is their vocation! Who dares to sneer at such a fraternity of honorable men—who dares to cast odium upon such a patriotic race? Their path is one of true glory, and it is their own fault if it does not lead them to the highest post of honor and renown."

Who can estimate—who appreciate the aggregate of benefits to a country which mechanics confer. May we not with just pride anticipate the period when the highest passport to the circles of the refined—the intelligent—the good, will be that he is a well-bred,—an educated mechanic.

Never marry but for love," says William Penn, in his Reflections and Maxims, "but see thou levest what is lovely."

To Gild Silk or Ivory by the action of Hydrogen Gas.

Immerse a piece of white satin, silk or ivory, in a solution of nitro-muriate of gold, in the proportion of one part of the nitro-muriate to three of distilled water. Whilst the substance to be gilded is still wet, immerse it in a jar of hydrogen gas, and it will soon be covered by a complete surface of gold.

REMARKS.—The divisibility of gold by precipitation in this manner is astonishing, for the coating is hardly the ten-millionth part of an inch thick.

This experiment may be very beautifully and advantageously varied as follows:—Paint flowers or other ornaments with a very fine camel hair pencil dipped in the solution of gold, before mentioned, on pieces of silk, satin or ivory, and hold them over a Florence flask, from which hydrogen gas is evolved during the decomposition of water by sulphuric acid and iron filings. The painted flowers or other devices will in a few minutes shine with all the splendour of the purest gold. A coating of this description will not tarnish upon exposure to the air or in washing.

Porcelain is gilded by mixing nitro-muriate of gold, gum water and pulverised borax. The mixture is laid on by a brush and the porcelain is burned in an oven. The gold is thus revived with great splendour. Porcelain and wares may be platinized, silver-edge tinned and bronzed in a similar manner.

The Europa made the quickest trip on her last voyage ever made. The entire voyage from New York to Liverpool and back, including her stay at Liverpool was made in 28 days.

The court yard of the English Admiralty, Whitehall, has a pavement of India rubber. It is laid down in pieces about twelve inches square and one in thickness.

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TO CORRESPONDENTS.

C. M. M. of Pa."—We like your plan and advise you to make a small model and try it. You will, as you say, get the expansive force of the steam, but we doubt whether it will be of much advantage. $2, all right.

"E. A. D. S. of Ohio."—We think the action of the vanes would be entirely too sluggish to be of any advantage. If it would operate well it would be a grand thing and soon take the place of the valves in force pumps.

" N. C. of N. Y."—The engraving of your Cider Press which you send, is too large for our paper. We can have a handsome one, on a reduced scale taken from it if you desire. It will cost you $6. Your other press *is* patentable. We can attend to your Patent Office business if you wish. $2, all right.

" O. F. T. of Ky."—It has cost us years of labor and study to be enabled to reply rightly to the numerous questions which we are called upon to answer. You could not expect us to give you all the information you desire without compensation, particularly as yours is a subject of much intricacy. In general we leave the sum to the option of those who write, as they can best tell the value to them of the information desired. Please forward $10.

" E. B. of Mass "—The manufacture which you speak of, is not difficult, and *might* be prosecuted as you have suggested, but not to compete with Cincinnati, for the very reason, that the scraps will not yield a sufficient amount to pay expenses. The fixtures are simple and the price would be about $300, to commence—on a small scale.

" N. C. of Ohio."—We have made enquiries about Griffin's heat generator, and find that it has its favorites and its opponents. His heat generator appears to be the most popular here at present—how long we cannot tell. The engines you wrote about are constructed with the common slide valve—eccentric on the main shaft. Your views and discoveries, relative to the power gained and lost by the length of the connecting rod &c., is a new view and new light on the subject of steam engines. Would you send us an article of moderate length, with the experimental data—the light should not be hid and you should have the due credit.

" C. M. of Ct."—The following is the best method of finding the pressure of a fluid upon the bottom of the containing vessel:—Multiply area of base in feet by height of fluid in feet, and their product by the weight of a cubic foot of the fluid.

" M. M. G of N. Y."—In regard to the power of a man unaided by machinery, the common estimation is the raising of 70 lbs. 1 foot high in a second for 10 hours in a day, which is equal to one fifth the work of a horse.—The muscles of the human jaw exert a force 534 lbs.

"E. P. of N. Y."—10 cubic yards of meadow hay weigh a ton. When the hay is taken out of large or old stacks 8 and 9 yards will make a ton. 11 or 12 cubic yards of clover dry, weigh a ton.

" B. P. N. of S. C."—The 16 horse engine an engraving of which appears in another part of our paper, would be just the power you require.

To Patent Correspondents.

" M. S. of Tenn."—Your model arrived safe on the 25th ult. It is a very ingenious invention. We shall have your papers ready shortly.

" A. E. B. of Ohio."—The quickest way will be to have us make an examination for you at Washington, through our agents. The expense will be small.

" E. N. of Vt."—We are gratified to know that you have received your Patent papers and that you feel so well satisfied with the way we have done your business. Your letter is so complimentary that we should be glad to publish it. Will you consent ?

" C. W. of La."—We regret you did not employ us from the first to secure your Patent. Not one in a hundred of those who take out Patents for inventors understand making out the papers properly, and many is the invention which has been utterly lost in consequence. Send on your model and we will draw up new specifications, and you may depend upon having things done right.

" C. D. R. of Mass.," " B. D. S. of Pa.," and " D. D. Y. of N. Y."—Your specifications and one copy of each of your drawings were forwarded to your address for signing and making oath to, last week.

" J. J. C. of Pa.," " J. & N E. of Ohio," " E. R. B. of Wis.," " A. B. and M. M. of Mass.," S. G. W. of N. Y.," and both of " P. B.'s of Mass.," with " A P. C. of do," will be attended to next week.

"A. B. of Ct."—Your Plane has arrived. We will add it to your papers which are in preparation.

" A. Mc.K. of N. Y."—We are making out new drawings. You will have your papers again shortly.

Holden's Dollar Magazine.

Again we chronicle the advent of the " American Blackwood" for November. premising as usual that it fully sustains the high literary reputation it has so nobly won. The contents embrace every variety of reading and present some of the most truthful as well as vigorous Tales to be found in the range of the periodical press. The style of articles in Holden are not of the *namby pamby* order—they are energetic as well as graceful, useful as well as readable. The Pulpit Portraits give us a better range of what may be styled *good writing* than any series of Magazine articles for ten years past and there is no disputing the fact that Holden's is *the very best* of the American Monthlies. Each number is handsomely illustrated and the volume of 12 numbers form as pretty a book as one of the high priced monthlies. We hope *Americans* will support and encourage this Magazine of Magazines, for they can certainly find none more worthy of their patronage. Mr. Holden gives a three dollar work for half price and must eventually supplant our high priced literature. Office 109 Nassau-st.

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WATERPROOF FELT FOR ROOFS.

THE patent Asphalte Roofing Felt has been extensively used in England for many years, and is an article that for strength, durability, and fitness for all kinds of buildings—dwelling houses, sheds, barns Conservatories &c. cannot fail to recommend itself.

Cheaper than shingles—lighter than slate, superior to zinc for flat roofs (as it is not affected by heat or frost) it makes a neat and elegant roof whether covered by paint, or Tar-composition and sand. 13 yards wide Cover 10 feet square—it comes in rolls 32 inches wide, and a person of ordinary ingenuity can complete a large roof in a few hours.

Samples and information respecting it will be forwarded on application (post paid) to
SAMUEL RITCHIE & Co., Agents,
n4 4t East Boston, Mass.

LAW'S STAVE DRESSING AND JOINTING MACHINE.

THIS Machine is now in operation at Mr. William Burdon's, 102 Front st., Brooklyn, every working day, between 9 and 12 A. M.

It dresses and joints properly, and with facility, the rived, or other stave, of all shapes and dimensions, without assorting and without waste of stock. It needs only to be seen fo be approved. n4 8w*

The Best Patent Agency in the United States.

THE subscribers would respectfully give notice that they still continue to attend to Patent Office business as usual. The long experience they have had in securing patents, together with their unrivalled facilities, enables them to say that THE BEST PATENT AGENCY, in the United States, IS AT THE OFFICE OF THE SCIENTIFIC AMERICAN, New York. It is not necessary, as commonly supposed, for an inventor to make a journey to Washington in person, in order to secure a Patent, as he cannot in any manner hasten the Patent or make his invention more secure. Any business connected with the Patent Office may be done by letter, through the Scientific American Office, with the same facility and certainty as though the inventor came in person. From a want of knowledge on this point, applicants for patents are often obliged to submit to great vexation, with loss of much money and time. They also frequently fall into the hands of designing persons, and lose their inventions as well as money. Those who wish to take out Patents or enter Caveats, should by all means have the business transacted through the Scientific American Office, as they may then rely upon its being done in a straight forward and prompt manner, on the very lowest terms. All letters must be Post Paid and directed to MUNN & CO.,
Publishers of the Scientific American,
s9 128 Fulton street. New York.

Portable Saw Mill.

FOR SALE CHEAP.—A first rate up and down saw, for boards, planks and heavy work, already fitted up with frame, table, fly wheel, &c. Length of saw 4 feet 6 inches. Price for the whole $60.

Curve Saw.

Also for sale, a first rate up and down saw for sawing out curves. It is in complete order, already set in frame, with table, fly wheel, band pulley, &c.—Length of saw 2 ft. 6 in. Price for the whole $25.

They can be sent with perfect safety to any part of the country. Any one wanting either or both the above has only to enclose the amount named and the saws shall at once be forwarded
MUNN & CO. Scientific American Office,
n4 New York.

Johnson's Improved Shingle Machine.

THE Subscriber having received Letters Patent for an improvement in the Shingle Machine, is now ready to furnish them at short notice, and he would request all those who want a good machine for sawing shingles, to call on him and examine the improvements he has made, as one eight in more shingles can be sawed in the same given time than by any other machine now in use. Manufactured at Augusta, Me. and Albany, N. Y. J. G. JOHNSON.
Augusta, Maine, Oct. 28, 1848. o28 1y

The largest, best and cheapest Dictionary in the English language, is confessedly

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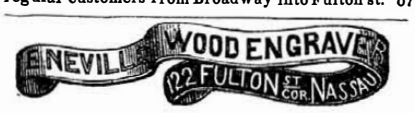

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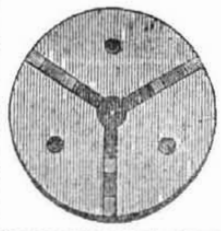

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For the Scientific American.

New Chemical Law.

No. 7.

It may be thought by many who are too anxious to oppose the rapid progress of any new truth, and who perhaps even now, have in their own minds condemned this law, without the least examination, that the examples which I have given, and which coincide so perfectly with the conditions required by this law, are selected expressly for the purpose, and with the object of coinciding with its conditions. If there is any one who believes that such has been the case, I would ask him to examine the series and their compounds for himself, and to show if possible one single instance where the law is at fault. A vast number of the boiling points, specific gravities, &c. of the substances contained in the examples previously given have not yet been ascertained; now then, if it so happens that when the specific gravities, &c. of these substances are calculated, and it is found that the results so obtained are at variance with the conditions of the law, then must it be abandoned; but until that circumstance happens, and with the present amount of proof for its support, the law will be held in esteem, regarded in a probable light, and impartially tested when an opportunity occurs.

Some objections may be raised to the admission of the truth of this law, on the ground that in its application, it entirely dispenses with organic radicals, instituted by the best authority, and which even now are employed by the generality of chemists, to illustrate the different transformations of their compounds. I have reference to the following radicals, viz. Methyle, Ethyle, Amyle, Cetyle, Formyle, Acetyle and Valeryle. How can the application of this law dispense with radicals, which never had the least shadow of existence but in name, purely hypothetical, and instituted only on the supposition that the constitution of organic compounds were similar in every respect to the inorganic. It is certainly better to claim the existence of known real radicals, than to place unlimited confidence in the existence of hypothetical radicals, which never have been produced. The present condition of science requires something more real and substantial than the idea that a number of substances can act the part of radicals, and yet can never be proved to exist. The benefit and advantage of this law to Chemistry are invaluable, and there is no doubt but that the time will come (when the laws which govern the specific gravities and boiling points of substances have been accurately ascertained) that it will be applied to their exact calculation. In this manner we shall know the relations which exist between the specific gravities, boiling points, &c. of a substance and its composition, and be enabled after the classification of a substance by the similarity of its chemical properties, to calculate its composition from its specific gravity, boiling point, &c., or the specific gravity, or the boiling point of a substance from a knowledge of its composition.

It must be apparent to all, that when a more perfect knowledge of the chemical properties of substances is attained by chemists, then they will be enabled to classify them into series, similar to those we have just described, and consequently will arrive at the knowledge of their specific gravities, boiling points, &c. by a much surer and easier method than by experiment. If introduced into the department of Organic Chemistry, upon the basis of the similarity of chemical properties of substances; it will reduce it to perfect order, by which each peculiar property of any substance may be easily retained in the memory. This is much to be desired, as in the present condition of organic chemistry all is confusion, and no particular connexion appears to exist between the substances, either in their composition or their chemical properties. Some doubt may exist in the minds of some whether this law does actually extend throughout the whole department of organic chemistry, but upon reflection it will be found that there is no room for doubt. The laws of nature are universal and therefore must extend throughout the whole department of organic chemistry. We conclude that this law is universal, for the same reason that we conclude upon the universaiity of the law of gravitation; the one is similar to the other. The law of gravitation consists in the fact that the particles of matter attract each other, whilst this law consists in the fact that the particles of matter attract each other with a peculiar order. It is therefore but an extension of the universal law of gravitation or attraction. If therefore the law of gravitation be universal, then also must this law, and consequently must extend to those substances which are at present considered elementary. At all events upon applying this law to these substances, we obtain results, which plainly indicate that they also are compound, and numbers of certain aggregated series.

S. N.

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New Flooring Composition.

Saturate a quantity of chalk, or marl, or lime, or loamy clay, or sandy earth, previously reduced to the state of a fine powder, with oil of tar, or mineral tar, or vegetable naptha, or any other resinous, oily, or fatty matter. Then take 1 cwt. of rosin, and melt it in a caldron exposed to a gentle fire, until all the water in it is evaporated, and throw into the caldron 2 cwt. of the saturated chalk, or other earth, and mix it well with the melted rosin. Next add from three to six pounds of liquid india rubber, or from three to six pounds of essential oil of tar, or some other oily or fatty substance, and after that from 3 to 5 pounds of sulphur; and finally 2 cwt. of fine dry grit, keeping all the while the contents of the caldron well stirred, till the whole are thoroughly amalgamated. When cool, the compound is of a slatish grey color, and of a close, granular texture.

This compound may be used by being laid down in a hot and fluent state, and of sufficient thickness; or combined with any of the natural asphaltes, or bitumen, or with wood or stone, to make a perfectly anti-damp flooring, durable and cheap.

Fire Escapes.

In London the Fire Department is provided with an adundance of Fire Escapes, which are found invaluable in saving property in the upper stories of buildings, also human life. They are simply long sacks with a hoop at one end with hooks to attach to the sides and sills of the windows. The other end is held in the street, and persons or packages are slid through them with perfect ease and safety.—They are wound on two wheeled carriages with an apparatus which moved by a crank, runs them up to any height. One person can manage a single one with ease, and whoever has passed through the principal streets in London at night, cannot have failed to see these Escapes standing ready for service.

As fires often occur in our cities where lives are lost for want of proper escapes, we do not see why Mr. Van Loon's, of Coxackie, in this State, should not answer a good purpose.

Chinese Carving.

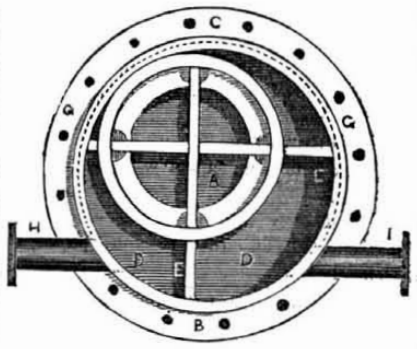
The means by which the concentric balls which come from China can be carved, one within the other, has long been matter of dispute. No joining is to be discovered, but a recent traveller states positively that each ball is constructed of two pieces, the edges of which are so finely scraped down that the edge of one hemisphere is made to overlap its counterpart with the greatest nicety. Thus one ball is easily enclosed within another. The joinings are then united by a peculiarly strong cement and by the employment of steam and pressure. He said that any one who wishes to make the expensive trial will soon ascertain the fact by applying a very powerful heat to one of these balls, which will open at the joints in due time.

Marble may be cleaned with caustic ley and lime, after which it should be well washed with soap.

History of the Rotary Engine.

Prepared expressly for the Scientific American.

Fig. 13.

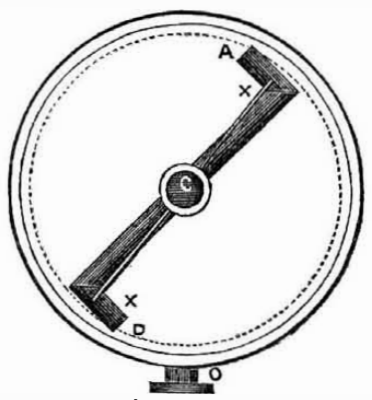


BRAMAH AND DICKINSON'S ROTARY ENGINE.

No. 3.

This is another rotative engine of Messrs. Bramah and Dickinson, and is constructed nearly like No. 1 of Bramah's. It exhibits ingenuity and is better than many which have been brought forward since this one was invented. A is a small wheel or cylinder, armed with cross sliders, fixed in a larger one B, but, instead of its axis being stationed in the centre B, as in the previous instances, it is moved as much eccentric as to cause the periphery of A to rub against the side of B, as at C; this causes the channel or groove D D D, to be formed of the shape which appears in the figure. The inner surface of the wheel or ring B is not perfectly cylindrical, but is a curve of such a shape as would be described by the points of the sliders E F, being of equal length in the revolution of the wheel A; or in other words, of such a shape as would occasion all the four points of the side sliders to be in constant contact therewith. The dotted lines G G show two grooves or cavities, through which the water, steam, or other fluid, contained between the point C and either of the apertures or the pipes H and I, passes into either of the said pipes; which water, steam, or other fluid, would otherwise be pinned up by the slider, and stop the motion of the machine when turned in either direction.

Fig. 14



SADDLER'S ROTARY ENGINE.

This singular rotary engine is the invention of a Mr. James Saddler of Oxford, England, who obtained a patent for the same in 1791. The following description will impart a full knowledge of its construction and operation. The steam generator in the boiler is conveyed through the pipe C, into the spindle or axis of the rotative cylinder A D, which is made steam tight by working in a stuffing-box. The steam passes along the arm of the revolving cylinder, nearly to its ends, where it meets a jet of cold water falls from the revolving cylinder into the bottom of the case, whence it is conveyed through a pipe, and is discharged by openings made in the ends or sides of another cylinder moveable in the horizontal direction, giving it a rotatory movement in the same manner as Barker's mill. The jet of cold water from the pipes X X, having condensed the steam, produces re-action, and the cylinder A D acquires a rotative movement. The inner case is steam tight; and the outer case serves the same purpose with the jacket in the reciprocating engines. Another mode of action is suggested by Mr. Saddler to be had by filling the case (in which the arms revolve) with steam, which would cause them to revolve by the pressure it would produce in being condensed in entering the arms.

No one can fail to perceive in this engine, the germ of what is called "Whitelaw & Stirrett's Water Wheel." The principle is that of Hero's engine and as constructed by Mr. Saddler and explained in this engraving and description, it will serve as a beacon to warn our mechanics from wasting time on such toys as this in future. We have no doubt but the History of the Rotary Engine which we are now publishing will be of great benefit in exhibiting what has been already invented in this field, and thus prevent time and money being wasted to reinvent (unwittingly) something old and thrown aside. This is one reason why we publish this history, and another, is the possbility that some hint may be suggested to some original thinking mechanic, that will lead to what is now considered an impossibility, by almost every practical engineer viz., "a perfectly tight operative rotary engine."

To prevent Metal from Oxidizing.

The metal should first be dipped in a weak acid composed of 2 parts sulphuric, 1 of nitric acid, in nine parts of water. After immersion in this till the metal is perfectly clean the article is to be washed in clean water, but the metal must not be rubbed, or touched with the fingers. It is then allowed to drain and when dry it is brushed over with copal varnish, which adheres firmly to the acidulated surface of the metal and never peels off. Iron plates treated in this manner have been subjected to the action of salt water for months without sustaining any injury—a little litharge added to the varnish makes it still better.

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